VIRGINIA WILDLIFE

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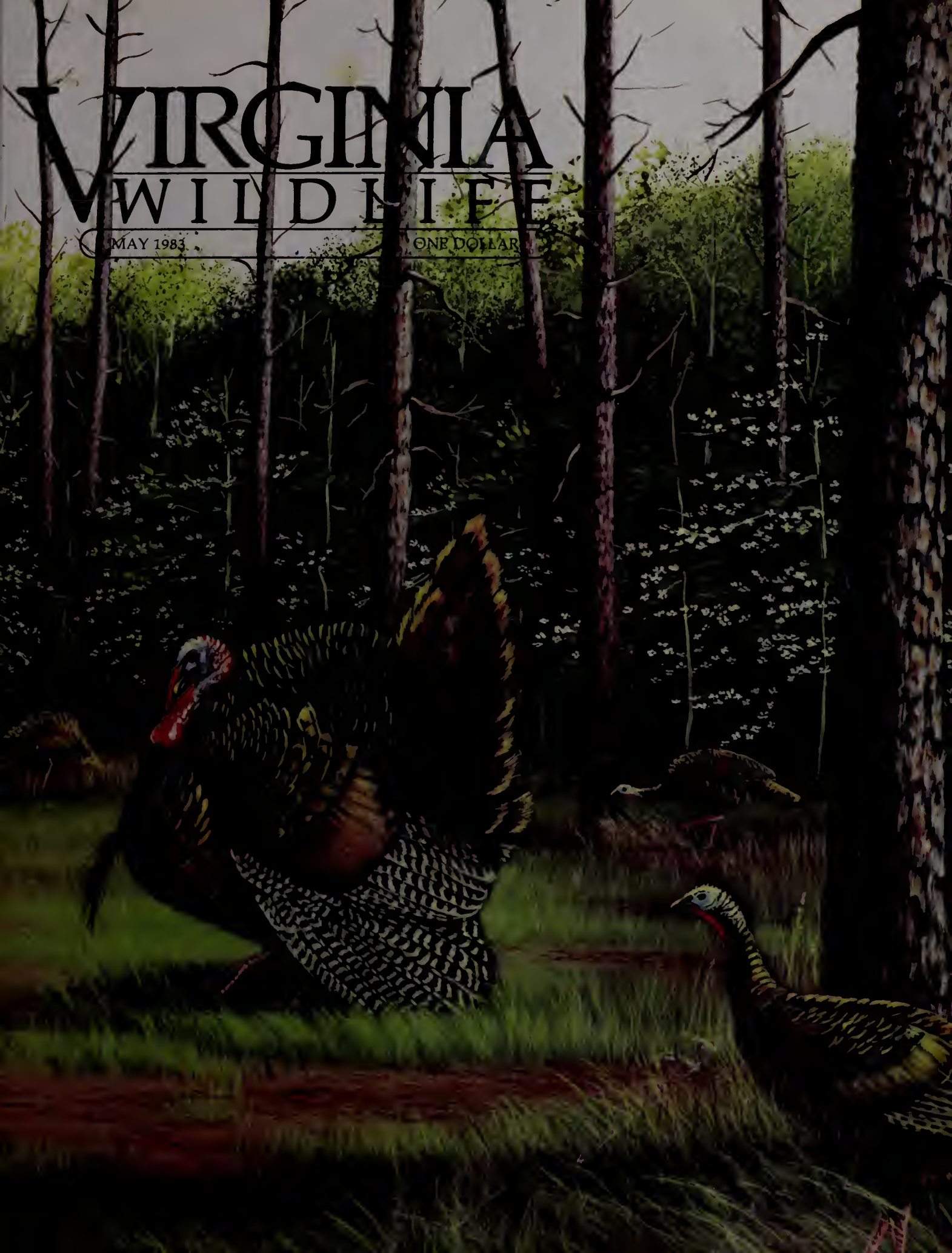

VIRGINIA WILDLIFE

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Dedicated to the Conservation of Virginia's Wildlife and Related Natural Resources
Volume 44, Number 5 *May 1983*

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Wild turkeys in spring foliage by John Shaw, King George. It's that time of year again: for more on spring flora, turn to page 18; if you pursue the spring gobbler, read what Kit Shaffer says about doing it safely, page 4.

Letters

Intercepted Letter

Jack:

I enjoyed your article in *Wildlife* about the old wooden baits; they caught as many fish, maybe more, than plastic imitations. And the price of today's plastic baits is outrageous, $3 and more for baits with 10 cents' worth of plastic and 10 more cents' worth of hooks. I have a collection of old wooden baits that still catch fish, although one or two are retired and are only to look at now and recall the fish I've caught on them. I'm afraid some fish would steal them away by accident now, especially an old Heddon black popper and a River Runt that were standards. Great fishing stories go with both of them. I'd rather not catch another fish than to lose either [one]. And remember the Pikie Minnow? I had a great afternoon of pickerel fishing once with that bait. And don't forget the Bass-Oreno.

George Huber
Etlan

Editor's note: The writer of this letter to Jack Randolph is an author himself; he's written for Virginia Wildlife, *most recently "Permission to Hunt," published in the September 1980 issue.*

Par Excellence—Almost

Charlie Sledd should know better (*Virginia Wildlife*, April 1983, "Watch Out, Fish"). The Coast Guard no longer requires that extinguishers carry C.G. approval. PFD's, yes, but *not* fire extinguishers; Underwriters' approval is okay. I'll bet you get many letters on this one. The regulations were changed last year. Charlie's article is a good one in spite of the slip. Your April issue is par excellence in my book.

John Beebe
White Stone

Maybe Charlie should have known better, but he and our safety officer, James Kerrick, spent the better part of a day tracking this one down. You are correct, UL approval is sufficient on fire extinguishers (approval numbers 5 or 6), but this regulation is at most four months old (at this writing) and the news had not reached any of us here who should have known (including law enforcement). You must have an "inside track"!

Thanks for pointing out the error, and thereby getting the word out. And thanks for your nice comments about the issue, too!—Managing Editor

Not Enough Hunting?

This letter is my opinion of your *Virginia Wildlife* magazine; not only mine, but many people that I know and talk to. A few years ago, I subscribed to *Virginia Wildlife* and after taking it for a long time I dropped it because it was too much literature about birds. After a few years I saw an issue a friend had and it gave all the records of how many deer, bear and turkey were killed in each county, so I decided to subscribe to it again. Since then I have seen very few things that interest me. It is the same old thing it was before.

There are so many things to write about I don't see how you can fill it up with birds all the time and call it a wildlife book. January issue had out of 36 pages 18 pages with either a picture of a bird or some kind of literature on them. Five pages were on rodents. If I had wanted to be a birdwatcher I would have subscribed to a birdwatcher's magazine. February I was looking forward to seeing the record on how much big game was killed in each county, but again, nothing.

Virginia has thousands of very interesting things to write about, so if you don't have anyone with enough knowledge to find those things—when my subscription expires, I will not be getting it anymore.

Johnie R. Hoffner
Madison

For every letter we receive like yours, we get at least one from a disgruntled reader who wants to know why we can't publish more articles on birds and plants, and fewer stories about "how to kill wildlife," or words to that effect. The debate rages on.

In 1981, we published 16 articles on birds; many of those were on game birds and were related to hunting. We published 19 articles on fishing and 22 on hunting. Among the five "how-to" articles we published were four that related to hunting or fishing. Articles which fall into other categories, such as mammals, ecology and natural history, locales, recreation and law enforcement and safety, are often related to hunting and/or fishing, and even where they are not, we believe that they have a broader appeal for the outdoorsman who may be a hunter but, more important, simply loves the outdoors. Remember the magazine's motto, "Dedicated to the conservation of Virginia's wildlife and related natural resources."

We publish a special issue in September devoted exclusively *to hunting, and a similar special issue in April on fishing. The non-hunters and fishermen simply bear with us for those two months. (The game harvest figures you missed in February are published annually in the special section of the September hunting issue.) In January, we didn't think it was too much to ask that the hunters and fishermen "bear with us" for a special issue commemorating the non-game tax check-off program's first anniversary. We tout the sportsman as a staunch defender of non-game and endangered species, and we didn't think the hunters and fishermen would mind that one special issue. For the most part, I think we were right. We're sorry you felt differently about it.*—Managing Editor

About the Authors

Kit Shaffer is a 32-year veteran of the Game Commission. Before retiring, he was field coordinator for the game division. Besides his articles for *Virginia Wildlife*, he's written a book on turkey hunting. He lives in Lynchburg. **Spike Knuth** is staff artist for *Virginia Wildlife*, a frequent contributing author, and writes and illustrates "Bird of the Month." **Rick Perry**, in addition to being game warden in Henrico County, is an accomplished outdoor photographer, and has now added feature-writing to his list of accomplishments. **Joel Artman** is assistant chief of forest insect and disease investigations for the Virginia Division of Forestry. This is **Sharon Morris'** first contribution to *Virginia Wildlife*. She lives in Millboro. **Carolyn Evans'** first story on "March Winds" appeared in the March issue of *Virginia Wildlife*. The Westhampton College junior is a biology major who worked with us for several months under the Quill Program of competitive liberal arts internships sponsored by the University of Richmond. **Jim Agnew** is the game warden in Goochland County. In addition to his boat work for the Game Commission, Jim served in the U.S. Coast Guard Reserve from 1974 to 1980. He is a 1977 graduate of the University of Virginia with a B.A. in English. **Lt. Herb Foster** is assistant supervisor of the Patrick Henry law enforcement district encompassing the Richmond area and south central Virginia.

VCGIF photo

Don't SHOOT I'm a Turkey Hunter

by Kit Shaffer

VCGIF photo

Carelessness makes it easy to miss seeing a camouflaged turkey hunter when you take aim. How many hunters do you see in the top photo? In the the bottom one? If you don't see two and four, respectively, look again. Do you see how easy it is to make a tragic error?

Those tragic New Year's headlines hit me with the impact of a 30-06 rifle slug—"Turkey Hunter Killed." The article described some of the sad details of the tragedy and noted that this was the second fatality involving turkey hunting in Nelson County during the 1982 season. There had also been a turkey hunting fatality in adjacent Amherst County. I was immediately struck with many conflicting emotions—sadness, compassion, despair, anger, discouragement, and helplessness.

In corresponding with James Kerrick, safety officer with the Commission of Game and Inland Fisheries, I discovered even more dismal and tragic news. Kerrick reported, "Turkey hunters are not faring too well this 1982-83 hunting season. As of January 10th, 24 turkey hunting accidents have been reported, resulting in 19 injuries and five fatalities. Compare this with the period of July 1, 1961 through June 30, 1982, in which 108 turkey hunting accidents were reported, resulting in 87 injuries and 21 fatalities."

What was happening to my favorite outdoor sport?

Turkey hunting has always been considered one of Virginia's premier sports. Hunting the largest, and at times the smartest, of all our game birds has traditionally been rated among the most thrilling of sporting experiences. Unfortunately, and too frequently, this supreme outdoor experience is marred by accidents, fear, unpleasantness and numerous near-misses.

Perversely, in many cases the turkey hunter is being inadvertantly hunted and shot. The hunter is becoming the huntee! In over three and a half decades of chasing wild turkeys, I have had more than my share of close calls.

The reason the Nelson County tragedy hit me so hard was that I had personally escaped a blood-chilling experience several days earlier. It all started when my setter located and scattered a large flock of turkeys. I built a blind out of cedar and Virginia pine saplings, covered my dog with camouflage material, and started yelping. It wasn't long before I noticed something moving toward me. Unfortunately, it was not a turkey, but a hunter sneaking toward the blind with his gun in readiness. Suddenly I detected a movement to my left and there was another hunter even closer, approaching with his gun to his shoulder. Obviously I was in big trouble; they thought that I was a turkey and they were ready for the kill. It was time for action—I blew my dog whistle and screamed as loudly as I could, "Don't shoot, I'm not a turkey!" It was amazing how quickly my would-be ambushers departed the area.

During the previous hunting season while accompanied by a hunting companion on the Chesapeake Corporation's Cooperative Wildlife Management Area in Bedford County, we had a number of similarly terrifying experiences. Would you believe that on that November day we called up five separate hunters who came crashing through the bushes and dry leaves toward our blind? What amazed us was that none of the hunters apologized; in fact, they were downright belligerent when they didn't find that expected turkey.

Rather than dwell on the negative any further, I offer the following constructive suggestions about turkeys and turkey hunting techniques which might reduce accidents and save lives. At the same time we would hope that readers might become more considerate, careful and successful sportspersons. If we can prevent just one accident in the future, our efforts will have been richly rewarded. Selfishly, I want to preserve my favorite sport, and furthermore I don't want to end up being a turkey hunting accident statistic.

Here are some suggestions which I hope you sportsmen and women will consider and put into practice while hunting the largest of Virginia's game birds.

It is virtually impossible to sneak up on or stalk a calling turkey close enough to get a shot. This game species has highly developed eyesight and hearing. They can detect the slightest sound or movement. At times I suspect that they can even observe the blinking of an eyelid! Any hunter who thinks he can walk through open woods, crunching dry leaves and breaking twigs, just doesn't know much about turkeys. Actually, the best way not to collect a turkey is to attempt to approach too closely.

When I first started hunting gobblers in the springtime about 25 years ago, I lost many a trophy by trying to move too close to the bird. Unfortunately, I only succeeded in spooking the gobblers; I was doing them a big favor by revealing myself. These days, as soon as I hear a gobbler, rather than take a chance on scaring him, I get set up and start calling. I know that the gobbler can hear better than I can and that his built-in radar will bring him directly to me if I can call well enough. I prefer to have the *gobbler* make the mistakes.

During the fall-winter season, when you hear a turkey, use the same system—hide yourself and start calling. You will soon be able to determine whether you are working on a real turkey or another hunter. Never try to sneak up any closer; if it's a turkey, you will scare him. If it happens to be a trigger-happy hunter, you might get shot!

To be a successful, safe and ethical hunter you should be doubly certain of your target before you pull the trigger. This statement is so elementary and so logical that it seems foolish to print, but some people let their emotions affect their judgement. The turkey hunter, especially, should strive for a clear target since a wild turkey is so difficult to bag. Unless you aim carefully for a head or neck shot, you will likely cripple the turkey and it will escape.

It is unbelievable how many hunters, when asked about an accident, will respond that he thought he saw a turkey, deer or a squirrel. If a hunter can't tell the difference between a fellow human being and a wild turkey complete with black feathers, ugly neck and head and skinny legs, he shouldn't be in the woods; he ought to be at his friendly neighborhood eye doctor being fitted for a set of bifocals.

For many years, I worked at hunter contact stations checking in bear, deer and turkeys. I would become furious when some hunter would confide that "he hadn't seen any game but he got a couple of good sound shots." These individuals are foolhardy and help to cause those unforgiveable hunting accidents. Any hunter who shoots indiscriminately at sounds or movements without properly identifying the game is breaking every law of sportsmanship and is asking for a lifetime of grief and regret.

Be aware that not every call or yelp which you hear out there in the woods is a turkey. During the fall and winter season it is frequently another hunter who has flushed turkeys and is attempting to call them into gun range. In the springtime, often the call you hear is an imitation of a real hen call made by a hunter trying to lure a lovesick gobbler. It is not always true, but today many sportspersons have become so skilled at the various techniques of calling that they actually sound better to the human ear than does the

wild bird. A shrewd turkey hunting buddy once told me that the best calling he hears now in the woods is from competing hunters, while the worst yelps are emitted by turkeys. The critical part of a turkey hunt is when you hear that calling or yelping; this is the time for extreme caution, not reckless action.

Years ago, in southwestern Virginia, a friend and I were working a gobbler during the spring. The old bird was responding to my call and was rapidly approaching our hiding place. He suddenly stopped gobbling and disappeared. We soon discovered the reason. An aged hunter in bib overalls came sneaking toward us from another direction. When he approached us he shouted in a loud voice, "I knew you weren't turkey, you can't yelp good enough!"

He added insult to possible injury.

It is most unfortunate that numerous turkey hunting accidents involve close friends or relatives. The pattern is predictable. The companions start hunting together, then, for unknown reasons, they separate. Later, one of the hunters mistakes his buddy for a turkey or some other game animal or bird, and a tragic accident follows.

I personally cannot understand the rationale of going hunting with a friend and then separating. Why not hunt together? For me, the most enjoyable, most productive and safest technique of hunting wild turkeys is to stay together. There are a number of advantages. One hunts with a friend in order to enjoy his fellowship. The kidding, the banter, the reminiscing and the jokes add to the enjoyment of the hunt. It is always comforting to know that there is someone close at hand in case you sprain an ankle, have a heart attack, get a snake bite or get lost!

It has been my experience that hunting closely with a companion increases your odds of collecting a wild turkey. Two pairs of eyes and ears double your chances of seeing, hearing and finding a crippled bird. During the fall-winter season, you are usually dealing with family flocks of turkeys. When these flocks are scattered or separated they will invariably return to the precise spot from which they were originally flushed (in order to reassemble). It is often possible to call in numerous birds to that blind built at the first point of contact. Why separate from your companions? Hunt together for the most successful results.

The same togetherness technique should be practiced during the spring gobbler season. If you are fortunate enough to be in good turkey habitat and know how to call, it is surprising how many times two, three, or even more gobblers approach together. Last spring in Highland County, six young gobblers came running to the hen yelp and the following morning, two adult gobblers strutted in together. Stay close and in constant contact with your hunting companion for enjoyment, success and safety.

We turkey hunters are perhaps the best camouflaged group of individuals in the world (with the possible exception of the Green Berets). We have a positive mania for disguising ourselves from turkeys. We religiously wear camouflage everything—gloves, face masks, pants, jackets, hats, and socks. It wouldn't surprise me to find that some avid turkey stalkers wear camouflage shorts and shoe strings! When we locate turkeys, we either build blinds or remain immobile in thick natural cover. Aren't we being too careful to hide ourselves from turkeys and inadvertantely making ourselves too vulnerable to other hunters who shoot at sounds and movement? Wouldn't it be smarter not to disguise ourselves so thoroughly? Isn't your life more important than collecting a turkey?

During the spring of 1982 an experiment was conducted in Missouri to determine whether or not gobblers could be called up and bagged while the hunter displayed blaze orange "alert bands." A total of 370 spring gobbler hunters voluntered to utilize the six-inch-by-five-foot-long bands either on their bodies or in nearby trees. An amazing 48 percent of these hunters were successful in bagging gobblers, compared with 34 percent of the general hunters in the state not concerned with the experiment. The most important development of the study was that none of the experimenters utilizing the blaze orange bands were involved in an accident! These results indicate many exciting and encouraging possibilities.

It is time that turkey hunters who don't want to be shot, crippled or killed start thinking and acting defensively. If orange or red clothing will prevent accidents, I'm ready to start using it!

Another defensive suggestion for preventing accidents is to carefully plan every hunt. Avoid, if possible, times and places in which you know that there will be large concentrations of other hunters. It is very foolish, for instance, to attempt to call turkeys west of the Blue Ridge Mountain during the two-week deer season when the woods are literally full of competing sportsmen. The same logic would apply to certain days and areas in the east when large masses of hunters are out. Opening and closing days, Saturdays, holidays, and special "either-sex" deer days should be avoided like the plague. The fall and winter season are so long that turkey hunters don't have to take chances with large crowds.

While on the subject of safety, we would advise that newly introduced turkey decoys are potentially dangerous tools and should be utilized with extreme caution. Safety officials in several states where they have been tested warn of potential hazards. If there are hunters out there in the bushes (and we have numerous accident statistics to prove that there are) who are shooting recklessly at sounds and movements, they sure as heck will fire at an exact replica of a turkey. If you are anywhere close to the decoys, you will be vulnerable.

Don't neglect to protect your hunting dogs. There have been numerous valuable dogs shot by careless shooters. The use of blaze orange dog collars and small bells might prevent an accident to your favorite hunting companion!

Finally, I would like to submit part of my own personal turkey hunting philosphy. To obtain your full share of thrills collecting a turkey, call it. There is absolutely no comparison between bush-wacking or accidently killing a turkey and the ultimate thrill you will receive matching wits and calls with a big black bird. Turkey hunting to me is the enjoyment of the environment and sportsmen friends. It is the thrill of discovering tracks and fresh scratching, the elation you experience when your dog barks and you hear and see turkeys running and flying in all directions. It is the colored leaves and the crispness of the weather in the fall and the green emergence of leaves and grass during the spring gobbler season. Turkey hunting is a combination of aesthetics, caution, patience and skills. Collecting a turkey is secondary, a fringe benefit.

To quote a popular TV police sergeant, "Let's be careful out there!" Should you think you hear a turkey calling, be extremely cautious. If you happen to observe an ugly old man weighing about 200 pounds, please don't shoot, I'm not a turkey! □

CRICKETS for Bream

Crickets instead of worms? Read on; you may be convinced.

by Carl "Spike" Knuth

"Crickets will outfish worms ten to one," said Lin Scott.

"Of course," I thought, "he's a little biased." After all, he's president of the Jimeny Cricket Farm, Incorporated, located on the outskirts of Richmond's north side. He co-founded the business back in 1978 and now is a major supplier of crickets for fishing bait and laboratory uses all along the East Coast.

"Oh, they're probably pretty good," I thought, " but better than ol' garden hackle?" To say something was better fish bait than worms almost seemed unpatriotic—even heretical! I mean, mom, baseball, apple pie and worms for fish bait are *American*. And besides, I've tried to use those big, hard black bugs. Try to hang on to one of those devils! Worse yet, where and how do you keep them? On top of that, bluegills seem only to suck at them or nibble at their kicking legs—they just aren't all that crazy about those noisy, rug-eating, tomato-ruining monsters! Or so I thought.

Lin was to set me straight about fishing with crickets one May afternoon on big Back Bay. We were with fish biologist Mitch Norman. We fished around the numerous duck blinds on the bay—especially the old, broken down blinds—and around the old shoreline buildings, built up on pilings off of Ships Cabin Point. We weren't having much luck except for a few bluegills caught at creek mouths and up along creek edges. The wind finally forced us into Beggar's Bridge Creek. We motored up to Ma and Pa Lovitt's where we refreshed ourselves with a big orange and candy bar. As we were about to leave, Lin insisted that we try in and around the old boat houses. He whipped his cricket-baited hook inside the darkened structure right up against the side. The little bobber dipped once and Lin was fast to a fighting fish. Lin proceeded to put in the boat six of the largest bluegills I've ever seen. The terms hand-sized or pan-sized almost didn't do them justice. Lin was proving his point.

Linwood H. Scott, now of Ashland, is a native of Danville. He first used crickets for bait when he was seven years old and his Grandpa Harris took him fishing on Wade's Pond near Turbeville, Virginia. He recalls one occasion when he and his grandfather caught "several hundred very large bream" on crickets. After growing up, Lin got "serious" about fishing, turning to "wormin' " for bass and fly-rodding for bluegills. It was only a few years ago that he got to thinking about

Lin set me straight about fishing with crickets. (Below) He proved his point time and time again. (Right) Some of the best bluegill fishing is in the small ponds in the state, where spawning beds (far right) are visible in the wooded shore shallows.

crickets again. He wanted to take his then-six-year-old daughter Malinda on a fishing trip. He had been frustrated in previous attempts using worms. He wanted a bait that was easy to use, one that would stay on the hook and one that would catch fish. His thoughts turned back to his childhood days and crickets, triggered by a newspaper article about a cricket farm. He began reading everything he could find on raising crickets. He visited the farm and was fascinated by the operation, so much so that he and a friend purchased 5,000 mature crickets just to "mess around with" as a hobby. What started as a hobby quickly became a fairly thriving business, a business born because Lin Scott liked to fish for bream.

Probably some of the best bluegill or bream fishing in the Commonwealth is in its small lakes or private lakes and farm ponds. Lin invited me out again to prove to me once and for all that crickets do indeed pale the worm into insignificance when it comes to catching bluegills. Lin knew of a small lake in Virginia's Northern Neck that was full of big bluegills. We paid our fee to the owners and drove down to the lake's spillway where the boats were kept. It was a beautiful little lake with lily pads, spatterdock, wooded shoreline with some marshy coves and points and beautiful clear, clean water. Another good friend of Lin's, John Bay of Richmond, has joined us for this trip and we quickly loaded the small boat in great anticipation on a beautiful May day. Lin pointed the bow to the far shore and turned the little electric motor to "AFAP" (As Fast As Possible). The wooded shore shallows were full of spawning beds, easily visible in the clear water. Those closest to shore were sunfish nests. Logs lay in the clear water and some tree stumps added to the good available fish cover.

Our strategy was simply to move quietly along the shoreline within casting distance, fishing up against or alongside stumps, logs and at the edges of weed beds. Light spinning and spincast gear with a number 6 or 8 hook, a single split shot, to get the cricket down, and a small bobber. Lin prefers to use a special cricket hook developed by Eagle Claw, a long-shanked number eight hook. Of course, the crickets we were using were not the big, hard-shelled black crickets we commonly see in the garden and field, but soft brown crickets. They are carried in a specially designed wire-basket-like can which prevents crickets from crawling out but allows your hand in to grab. They are hooked on in much the same manner as a plastic/rubber worm is rigged. The cricket is

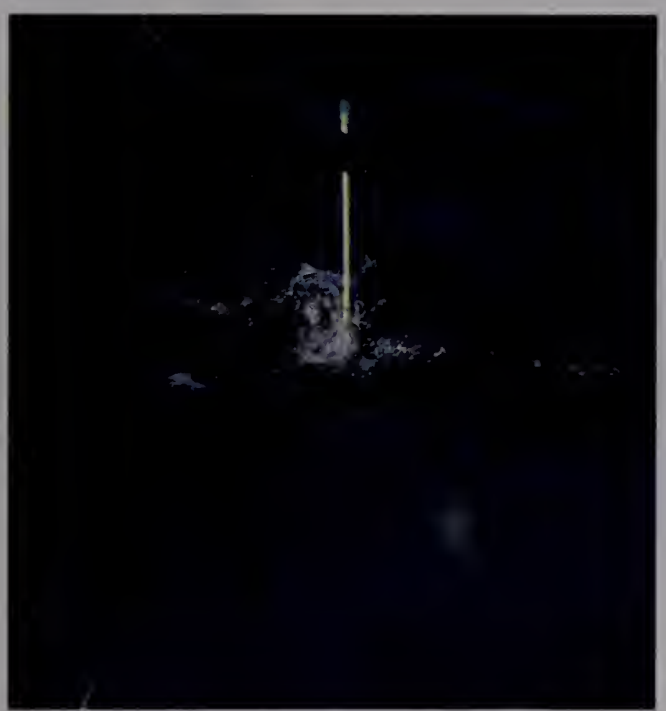
"double hooked" by running the hook point down through the cricket's back, just behind the head between head and the tough center section. The hook is shoved through, turned with point upward and point buried in the cricket's soft rear end. The hook is fully covered with only the scrambling, kicking legs dangling, giving a tantalizing come-hither action to bream. Lin says the real beauty of crickets is that it's a big juicy mouthful that flows, hook and all, into the bluegill's mouth when it sucks at the bait. No picking or nipping at dangling ends. Be ready, because a big bluegill really socks a cricket with gusto when it does hit. A single cricket hooked properly may be good for three to five fish or more. However, if it starts to come apart, put on a fresh cricket, otherwise the bluegills will be back to nipping the loose pieces. Also, after being water-soaked, the smell and flavor of the cricket is leeched out—or so it seems—and it is less attractive.

I watched Lin bait up and cast his rig to the side of a log. He immediately took the slack out of the line so he constantly had an almost straight pull from the bobber back. This way, a mere flap of the wrist would set the hook into a biting bream. To keep the line from sinking, he held the rod tip higher; however, then a gust of wind could put a big bow in the line. He'd keep a tight line by turning the reel handle ever so slowly. If the line is bowed, of course, the hook and bobber will follow the bowed line until the pull you exert straightens the line out. Be ready to strike hard, fast and straight when a bluegill takes a cricket!

Lin's cricket had no sooner hit the water when a big, colorful bluegill clobbered it. Actually we had missed getting bluegills on their spawning beds—at least most of them seemed to have already spawned. When the male bluegills are protecting nest and eggs they are very aggressive, striking in anger, or to protect moreso than out of hunger. They are very vulnerable at this time. One may wonder if this wouldn't jeopardize future populations; however, bluegills are extremely prolific and it takes only a fraction of successful nests to keep a pond or small lake full. Actually, most small bodies of water have the opposite problem of too many bluegills. When bluegills outgrow their food suppply they become stunted and numerous. No one wants little bluegills, so you actually help a pond by keeping them. Apparently, the lake we were fishing has somehow achieved a good natural balance. Lin, John and I caught our share of big bream, enjoying comaraderie, conversation and cricket fishing for bream. □

Sharpen Up On CARP

Bowfishing is an exciting challenge in itself, but it's also good practice for the bowhunter.



by Richard M. Perry

"Missed again!"

Those two words sum up many of my experiences with bow and arrow, whether the quarry was a bull elk or trophy mule deer in Colorado, whitetail in Virginia, or yes, even the sluggish carp that inhabit the waters of the James River in Richmond. The challenge of the bow, the advent of the compound, plus more liberal seasons for game have led more people to take up this age-old sport.

Naturally, one of the best ways for an archer to improve his accuracy is practice. And the archer may practice his skill in two sports: hunting and fishing. Bowfishing for carp is a excellent recreation for improving accuracy and can provide many enjoyable hours afield.

photos by Spike Knuth

Bowfishing for the exotic carp is excellent recreation that provides practice for accuracy. It has proven that it can thrive in waters totally unsuitable to other fish.

Carp (*Cyprinus carpio*) are not native to North America but were originally found in Asia. The fish were plentiful in China where they have been raised for almost 3,000 years in ponds as a readily available food source. Carp were then introduced in Europe and raised in ponds for food; there they were considered quite a delicacy. Today, carp are still being selectively raised in ponds and sold to fish markets throughout the world.

There is no record of the first carp introduced in the United States, although they were probably brought over during the first few decades of the 1800's. In 1877, the United States Fish Commission imported carp from Germany and began raising carp in ponds for distribution throughout the United States. By 1880, the Commission had received over 2,000 applications for young carp. Over the years, the carp has proved to be an extremely hardy fish, able to thrive in waters totally unsuitable for other species of fish, thus providing sport for many.

The carp is considered a non-game fish by the Virginia Commission of Game and Inland Fisheries and therefore may be taken with bow and arrow. A fishing license is required to bowfish for carp and the activity must take place during daylight hours. Crossbows and spearguns are illegal in Virginia.

The equipment needed for bowfishing is relatively simple and inexpensive. Basically, all you need is a large spool attached directly to the bow, 70-90 pound test line and a solid fiberglass arrow tipped with a harpoon type fishing head. This entire set-up normally costs $10 dollars in addition to the cost of a bow. Some archers equip their bows with a spinnning reel and after shooting a fish, they just reel them in.

The solid fiberglass arrow is necessary to penetrate water and still have the power necessary to pierce the tough sides of large fish. Good quality fishing arrows are equipped with a screw-off harpoon head for easy removal from the fish. The fletching on the arrow is normally made of rubber since conventional feathers would quickly become soaked and useless.

Once the carp are found, and your equipment is ready, you might think it's just like shooting a "fish in a barrel." Wrong! This is when refraction comes into play. Light travels at a constant velocity of 300 million meters per second; however, when light penetrates another medium such as water, the lightwaves are suddenly slowed, causing the rays to bend, or refract. This property can be easily explained by a simple experiment. Drop a nickel in a coffee cup with the nickel against the edge facing you. Place your eye level so that the coin is just barely out of your line of sight. Now, pour water into the coffee cup and presto, the nickel becomes visible. What you are seeing is a deception: the nickel is not really in direct line with your eyes; you are seeing an image of it.

Hence, refraction plays an important role in shooting at fish in the water. As illustrated in the previous experiment, you must shoot below the image to hit the real object. Unfortunately, I cannot give you an exact formula on how far to shoot beneath a carp to be able to hit it. The distance varies with depth of water and angle of shot. Only experience and missed shots can give you the correct aiming point. This element adds even more challenge to the sport.

The end of April, and May and June comprise the spawning time for carp. At this time, the carp enter shallow water and can be readily seen and heard because of the loud splashing and rolling of their annual mating ritual. This is prime time to arrow a large carp. Several methods may be used in order to get close enough for a good shot: walking along the bank, wading the shallows, or stalking by boat. Carp are wary and cautious fish and a slow, quiet approach is usually the best one.

Carp may attain very large proportions and a degree of caution should be used by anyone bowfishing for them. The unofficial world record for carp is one that was taken in Pretoria, South Africa: 83 pounds, 8 ounces. I remember seeing a carp mounted and on display at the Hardee's in Front Royal. The fish was taken from the Shenandoah River and was in the 50-pound class. While bowfishing at Hog Island, near the Surry Nuclear Power Plant, I was actually knocked down face first in the water by a large carp that hit me from behind while I was wading the shallows. Large carp are powerful; arrowed carp have towed small boats and even jerked bows out of the hands of unprepared archers. The largest carp I have taken was only 25 pounds; however, 40-pound specimens are not unusual in Virginia waters.

When you've done everything right, and you have two or three beautiful carp, what do you do with them? Why, eat them, of course! Here is the first recipe I heard concerning the preparation of carp. Take one fresh carp and cover the fish with fresh cow manure. Next, cover the fish with hot coals and ash from a hot fire top and bottom. After an hour or so, the fish will become quite hard and black. The fish is removed from the fire and the outside is cracked open like a shell. All the skin and scales are adhered to the coating and the beautiful, flaky-white flesh of the carp is left. I swallowed this old-timer's story, "hook, line, and sinker," until he told me the carp was still unfit to eat but the manure coating didn't taste too bad.

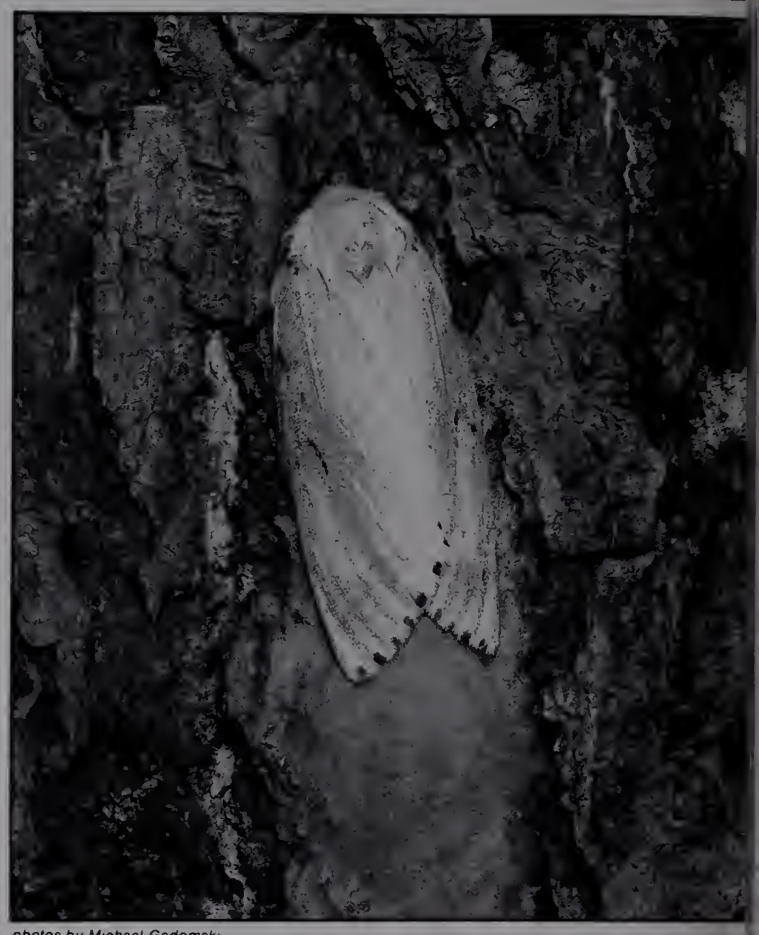
Like any food, preparation is the key. Customary cooking procedures for most fish do not work for carp. Unfortunately, the carp's flesh is full of many forked bones. Its skin and larger bones are thought to impart much of the bad flavor to cooked carp. The method for delicious fried carp is to first skin the fish. Then, use your fingers to strip the flesh from the fish; avoid the bones as you peel off strips of meat. These small fillets may then be rolled in flour and fried in hot vegetable oil until they're a crispy, golden brown. This method will show that carp, properly prepared, may be a delicious alternative to other fish already enjoyed by sportsmen.

Bowfishing for carp can be an exciting and rewarding sport for anyone who enjoys the outdoors. The practice could prove invaluable. Shots missed at carp could sharpen the eye for whitetail hunting in the fall. With rising food prices, the carp may provide additional fare for the table. The carp, although a relative newcomer to Virginia, is here to stay; let's enjoy his appearance. Good luck! □

COPING
With the Gypsy Moth

The gypsy moth has arrived in Virginia; how do we deal with it?

by Joel D. Artman



photos by Michael Gadomski

Back in 1869, a French scientist brought the gypsy moth to Medford, Massachusetts. He hoped to cross it with the silkworm to produce a better breed for the U.S. silk industry. Genetically, it was never in the cards; it would be like trying to cross cardinals with blue jays. Worse yet, some of the gypsy moths escaped, and since then, this voracious pest has spread throughout New England, New York, New Jersey, Pennsylvania, Maryland and into Virginia.

During the summer of 1980, gypsy moths stripped the foliage from trees covering 5.1 million acres in the Northeast. That was a record for defoliation in this country. Unfortunately, the gypsy moth was not satisfied. About 13 million acres of defoliation were recorded during the summer of 1981. High insect populations in the Northeast collapsed and "only" eight million acres were defoliated in 1982.

Life Cycle

The gypsy moth is a defoliator—it eats the leaves of over 300 plants. Of the plant species that they feed upon, they prefer oaks and Virginia has about 10 million acres of oak-hickory forest.

In the spring, about the time that oak leaves begin to unfold, gypsy moth eggs begin to hatch. The tiny caterpillars (larvae) remain on the egg mass for a short time before beginning their move to the tree tops. At this early stage, they are very light and densely clothed with hair. They can suspend themselves on threads of silk and may be carried by the wind into new areas. This is one means of spread.

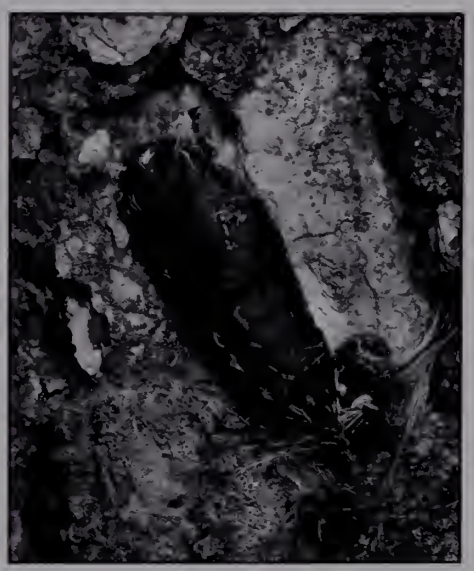
Larvae must shed their skins (molt) in order to grow and develop normally. Those that develop into male moths usually molt four times; females normally molt five times. The larvae continue to feed through most of June, and when fully grown, each is consuming about one square foot of leaf area each day.

Feeding is essentially complete in late June and the caterpillars are ready to begin transformation into the adult stage. After the final molt, larvae enter the pupal (cocoon) stage. In 10 to 14 days, the transformation is complete and the moths emerge. It is now July to early August. Male moths are brown, small bodied and strong fliers. There is a black "V" pointing toward a dot on each fore-wing. The marks are a little difficult to see through the brown color, but with close inspection they are usually visible. Female moths are white, heavy bodied and unable to fly. They have the same black "V" on each wing pointing toward a dot. Against the white background, these marks are much more evident than on the male. The moths do not feed; their only purpose is reproduction. Since the female cannot fly, she emits a sex attractant (pheromone) that draws males to her. They mate and she lays a single mass of 100 to 1,000 eggs wherever she is. While I have had females deposit egg masses on my shirt, they are generally well hidden. Egg masses may be anywhere on trees, rocks, camper trailers, loads of logs, Christmas trees, nursery stock, dog houses, outdoor furniture, etc. This is another means of spread. If you are in the northeast at the right time of year, you could bring the insect back with you.

Forest Problem or People Problem

Deciduous trees in good condition can usually withstand two or three years of severe defoliation before dying. The occasional evergreen that is defoliated cannot tolerate more

(Facing page) gypsy moth laying eggs; (left) egg mass; (below) the pupae.



than one heavy defoliation. During August and September, heavily defoliated hardwoods will refoliate, but putting out a second crop of leaves in one year greatly reduces food reserves. The first trees to die are generally very old or very weak from other kinds of stress. Trees growing on poor soil and those suffering from drought similarly cannot withstand repeated defoliation.

The gypsy moth will kill trees in Virginia. I wish I could say whether five percent or 10 percent or 20 percent of the trees in heavily defoliated forested areas will die, but I cannot. A number of interacting factors over which we have no control greatly influence the vigor of trees and their ability to tolerate defoliation.

Aside from tree mortality, the problem associated with defoliated trees must be considered even if every one of them will refoliate. I have seen many thousands of acres of the Blue Mountains in Pennsylvania stripped of foliage in July. The only leaves evident are those on yellow poplar; the gypsy moth does not feed on yellow poplar foliage. Aside from the poplar foliage, the area appears as it would be in winter. Even the understory vegetation, the greenbriar and the huckleberry, is leafless. The defoliated area is strange to walk through. There is no shade—no way to escape the hot July sun. No birds sing. In fact, it is not just the birds; all wildlife has vacated the area. The area will be recolonized when the trees refoliate, but how strange to walk in woodland in July and neither see nor hear wildlife.

The danger of forest fires increases. Without shade, the forest floor dries quickly and returns to an early spring condition—that time in Virginia when the danger of forest fire is greatest.

Another concern about this forest pest involves tourism. Who would want to visit our Blue Ridge Mountains when large areas are leafless? There is nothing pretty about a defoliated mountain. In Virginia, tourism has a trememdous impact on the economy. I fear the gypsy moth may well decrease the number of people who travel through, camp in or otherwise enjoy our forestland in summer.

If the insect were confined to uninhabited woodlands, that would be one thing, but it is not! The bug is just as happy in your yard as on a mountaintop.

As the larvae grow in size and number, they consume more foliage and soon the shade in your yard is gone. There is a constant rain of dry pelletized droppings on your roof and while it may sound like a gentle rain, too much is too much! Your lawn furniture, picnic table and barbecue are covered with droppings, half eaten leaves and dead caterpillars.

When caterpillar numbers are high and food is short, larvae often get the "wanders." They move out of the trees, crawl across yards and trees, climb on houses, cars and people. One man I spoke with in New Jersey could not use his driveway. It had become so slick with squashed caterpillars that the car could not pull the slight incline. In some areas, Highway Department trucks have been used to spread sand on roads to reduce the hazard caused by crushed caterpillars.

The gypsy moth experience is not pleasant. Perhaps the picture I have painted is the worst that you might expect. If that is so—great! You may expect the worst and get away with much less. On the other hand, if you live, as I do, in a wooded area where oak is the predominant species, what I've

The gypsy moth is in Virginia and nothing will stop it. The job is no longer eradication or even containment. Our task is to develop techniques that will allow us to tolerate its impact. (Right) defoliation resulting from the voracious moth. (Far right) larva.

described may well occur unless effective control measures are applied.

The gypsy moth is in Virginia and nothing will stop it. The job is no longer eradication or even containment. Our task is to develop techniques that will allow us to tolerate its impact. Folks like to cook outside in June and to sit in shade on the patio. They want to minimize mortality to yard and forest trees. Working together, perhaps we can minimize some of the problems and learn to live with the gypsy moth as we do with outbreaks of other bugs that we sometimes must face.

Control

The gypsy moth program in Virginia will be a joint effort of the Virginia Division of Forestry (VDF), the Virginia Department of Agriculture and Consumer Services (VDACS), Virginia Tech, the U.S. Department of Agriculture and the affected municipality. A Virginia Gypsy Moth Advisory Committee has been established. It is composed of members of the previously-mentioned groups as well as forest industry and the Association of County Governments. The committee will serve as a "sounding board" where all concerned can be kept up to date and where control strategies can be debated, formulated and coordinated.

VDACS, because of existing legislation, will handle control and quarantine aspects in the advancing front of the infestation and in isolated infestations that "pop up" outside the generally infested zone. Once an area has been classed as generally infested, the VDF will handle work in forestland. The VDACS will be responsible for control in infested residential areas. The VDF will conduct aerial defoliation surveys and assist the VDACS in residential areas with development of control strategy. Virginia Tech will work in the area of information, education, and research, and its quarantine lab along with the VDACS lab will be used to house various life stages of the insect to determine which parasites and predators are active in a specific infestation.

In the forestland, I do not foresee wide-scale spray operation. From a cost-benefit standpoint, such a program is rarely practical. An exception to this, however, may be some high-value, high-use recreation areas. There, control may be necessary if you and I are to continue to enjoy the use of these areas.

Our work in most of the forestland will involve monitoring parasites and predators and introducing those which are absent.

Before going further, it would be helpful to know that the gypsy moth carries a control measure around with it. A virus, carried by all life stages, will manifest itself when the population is under stress. That stress normally comes when the insect has eaten itself out of house and home before completing larval development. Normally this occurs after two or three years of heavy defoliation. Infected larvae die and high populations are reduced to the few that escape infection. It is here that parasites and predators become so important.

As the gypsy moth population builds, so do the numbers of parasites and predators. After the pest population is greatly reduced by the virus disease, a high population of parasites and predators remains. The parasites and predators can then be very effective in their attack on the relatively small number of gypsy moths in the area. That activity could extend the period between major defoliations, which, in turn,

gives the trees more time to rebuild food reserves before the next defoliation. Each year that we add to the period between major defoliations is extemely important.

In inhabited areas where gypsy moth populations are very low, egg masses can be destroyed during winter months, but at low population levels, the egg masses are very difficult to find. Perhaps we could define low population levels to be those having one to 10 egg masses per acre. Those few egg masses may be widely scattered on any tree, wood pile, log, stump or rock on that acre.

Bands of burlap can be tied around oaks. Larvae, as they move up and down the tree, will tend to congregate under the bands where they can be collected and destroyed. Realize, however, that you will not catch all the larvae, that you will destroy parasites that happen to be inside the larvae, and that many people do not like to handle the larvae. Again, this approach would have merit only when populations are low and only if all your neighbors do the same thing.

Since the male moth has to "zero in" on females guided by the sex attractant she emits, he may be confused if there is a surplus of attractant in the area. This is the idea behind the confusant techniques in which an area is saturated with the synthesized attractant on tape or in traps. Without successful mating, eggs laid by the female will be sterile. This approach shows promise in low level populations. Enough area must be treated, however, to minimize invasion of insects from surrounding properties.

By the time you are experiencing moderate to heavy populations and if you want to reduce the nuisance and protect your trees, effective control is only possible with one of the chemical or biological sprays. Virus will eventually cause a natural population collapse in your yard, just as it does in forestland, but in a yard this is a mixed blessing. The population will be reduced by the virus, but you will have to tolerate two or three years of heavy defoliation before the collapse. When the virus attacks larvae or pupae, it transforms their body contents into a black fetid soup. If the material gets on your house paint, it leaves a permanent stain.

There are numerous materials registered by the Environmetal Protection Agency for gypsy moth control. Some may be applied from the ground or air; others are approved only for ground applications. Spray applications remain a subject on intense controversy. Infested states to the north have faced and continue to face the "spray versus anti-spray" issue. Virginia will be no exception. Already we have those who will want to spray and those who will fight spraying however they can. Regardless of your position, if your home is within the generally infested area and it falls inside an area that qualifies for a state-coordinated suppression program, spraying would be done only with your consent. The VDF and VDACS will make recommendations; it is up to those who inhabit the area to make the final choice.

Finally, there is a new term that many of us are familiar with—Integrated Pest Management or IPM. It involves evaluation of all strategies including natural, biological and chemical as well as no control. Then, for a given situation, the most environmentally acceptable and effective strategy can be recommended.

Virginia has about 10 million acres of food for the gypsy moth. The prospect of continued invasion portends trying times ahead for the Commonwealth, its residents and visitors. □

Spring's Reward

An Illustrated Essay by Sharon Morris

Each spring, Virginians head for their favorite areas of the forest. Some are hunting spring gobblers with visions of roast turkey on the dinner table. There are others who are in search of the tasty morels found in scattered groups, sometimes by the basketful. Others are out hoping to record the return of a summer tanager or a straggling snowy egret, while on the spring bird count.

There is, of course, an abundance of regeneration in the spring, and there is no better place to shake a winter's layer of dust off the spirit than to walk on the soft, dank ground, breathe the warm, moist air. . .and to see the beautiful, inspiring rebirth in the forest that is the profusion of wildflowers stubbornly pushing their way through a layer of dead leaves and ferns, or growing floating in the water.

The wildflowers evoke a feeling of freedom: not confined to a pot, nor given artificial nourishment, these plants use the natural elements of their surroundings for life.

As we enter the woodlands this spring, whether for hunting, gathering, fishing, or simply to be part of the resurgence of life, we must take care not to trample the resilient, yet fragile, wildflowers. The many different orchids, trilliums, and the abundance of other early bloomers have been waiting as long as we have to come out once again and share in the freedom to stretch toward the sun.

Moccasin Flower (*Cypripedium acaule*)

This orchid grows from six to 15 inches, May through June, in acid woodlands and bogs.

Hepatica (*Hepatica americana*)

This member of the buttercup family
grows in leafy woods, March through May.

Showy Orchis (*Orchis Spectabilis*)

This member of the orchid family
can be found in rich wooded soil, April through June.

Large-flowered Bellwort (*Uvularia grandiflora*)

This plant grows 16 to 20 inches
in wooded areas, April through June.

Painted Trillium (*Trillium undulatum*)

Also known as the "trinity flower," this plant
grows in acid woods and bogs, April through June.

Marsh Marigold, Cowslip
(*Caltha Palustris*)

A larger member of the buttercup family, this plant is also a succulent. It inhabits marshes and brooksides, April through June.

Bloodroot (*Sanguinaria canadensis*)

These pollenless plants grow in dense woodlands, March through May. The stem and roots yield an orange liquid sometimes used as a natural dye.

May-Apple (*Podophyllum peltatum*)

This plant produces an edible fruit that has a tart taste. It grows 12 to 18 inches and can be found in woodlands as well as open areas, April through June.

Beavers

by Carolyn Evans

As the warm weather approaches and spring is in the air, there is much activity in nearby woods and streams. For the beaver, spring is the time of life—the time of birth. During the month of May, the female is busy preparing the *lodge*, the beaver's house, for the arrival of her young. Her first duty is to chase the male from the lodge so that he will not interfere with any of her preparations. The beaver's lodge looks like a large mound of trash and sticks. To keep her young dry and warm, she shreds wood into soft fibers which provide a comfortable bedding.

Beavers have only one *litter*, or group of babies, a year; an average litter size is four. Baby beavers, known as "kits," are about 15 inches long from the head to the end of the tail, and weigh only one pound at birth. However, they are born with their eyes open and a full coat of fur, and most will begin to swim when only 13 hours old. Beavers will eat grass, ferns, roots, almost all water plants and bark from the trees.

The beaver is in the same group as hamsters and guinea pigs, called *rodents* because of the pattern of the teeth. The mouth consists of four gnawing front teeth and 16 rear teeth which never stop growing and become sharper with use.

The beaver is the second largest rodent in the world. The capybara of South America is the biggest. The prehistoric beaver of a million years ago reached fantastic weights of 700 to 800 pounds, whereas today, the average beaver weighs between 40 and 60 pounds and measures about 48 inches long.

Beavers are well adapted for swimming. Their fur is composed of two layers: a layer of long, silky guard hairs and one of a thick, wooly undercoat. The beaver's fur is very thick and oily, and since water and oil do not mix, water almost never soaks through to the skin. When the fur is wet, it feels very smooth and slippery.

When swimming underwater, the beaver uses built-in nose and ear "plugs" to "stopper" its nose and ears so that water can not drain in. The beaver also has very good underwater vision. Due to large lungs, beavers can swim up to a half of a mile while underwater.

Leonard Lee Rue

One outstanding characteristic of the beaver is its large, flattened, paddle shaped tail. The tail is used in swimming only to help steer the beaver's body and its most valuable use is to serve as a prop or support when the animal sits upright to feed or is at work cutting down a tree. The tail length can measure up to 16 or 17 inches. The base of the tail is covered with body fur while the more flattened portion is covered with hard scales. The beaver will often slap the tail in the water and the explosive crack and splashing of water serves as an alarm signal to other beavers.

Beavers are colonial animals; that is, they live in family groups called colonies. A colony is characterized by the presence of lodges in which they live and also by a dam or series of dams. A dam is constructed of almost everything. Beavers will work for three to four nights cutting down trees. Actually, in the process called "falling a tree," a tree is cut most of the way through by the beaver's sharp teeth and then the tree falls to the ground. The trees drift downstream and pile on top of each other until they block the path of the moving water. Most of the dam is made from small pieces of dead and live wood, grass, rocks and mud. Some dams, built by several generations of beavers, are as high as 12 feet and as long as a football field! By building a dam, the beaver floods the area with still water around the lodge and here the beaver can run to safety from other dangerous animals. Predators are unable to get into the beaver's lodge because the entrance, or door, is small and underwater. Therefore, inside the lodge, beavers can eat, sleep and play and are safe from enemies. □

ACTIVITY

Find the hidden words within the puzzle. Words can be printed in all directions so search carefully. The first word, beaver, is circled for you.

Answers in next month's column.

Beaver ✓
Lodge ✓
Kits ✓
Litter
Rodent ✓
Colony ✓
Tail
Dam ✓
Trees ✓
Teeth ✓
Fur ✓

X	K	I	T	S	B	E	I	J	O	C	O	L	O	N	Y
B	H	L	E	H	L	B	T	P	R	Z	A	R	K	U	C
U	O	E	C	D	R	A	B	I	O	M	S	L	I	A	T
I	R	B	E	H	T	Z	A	T	D	K	C	F	X	D	E
T	Z	A	L	M	B	E	A	V	E	R	G	J	N	Q	E
B	L	I	Z	S	U	G	D	H	N	F	M	T	A	E	T
O	G	R	M	A	D	D	K	F	T	P	I	K	F	J	H
T	U	A	H	G	B	O	T	Q	B	Y	V	L	P	T	L
F	V	J	T	D	P	L	C	M	R	E	T	T	I	L	R

The White-Faced Clown:

The White-Breasted Nuthatch

by Susan Gilley

The white-breasted nuthatch is a funny little bird that comes down trees head first. The nuthatch defies the law of gravity. To descend a tree, it places one foot under its breast the other under its tail, and digs its long claws into the bark to hold itself so it can lift its head and see things as we do, right side up.

As you watch the nuthatch in your yard, you might see *him* watching *you*; perhaps he is wondering what kind of creature you are, that you walk around right side up.

Over time, those who have observed this small bird have given it several nicknames: the upside down bird, topsy turvy birds, tree mouse, and devil down head. The common name, "nuthatch," comes from the bird's method of hacking open a nut, or "nut hack." The bird wedges the seed or nut into a crevice and pecks at it with its slender bill until it cracks open.

The nuthatch resembles members of the woodpecker family, but actually belongs to the family Sittidae. All the family members forage by descending trees. Nuthatches have neither the stiff tail feathers woodpeckers use to prop themselves up, nor the ability to excavate tree cavities.

There are four different nuthatches in North America: the pygmy, the brown-headed, the red-breasted and the white-breasted. The nuthatch is a close relative of the titmouse, another tree foraging bird.

Nuthatches are small birds. The largest member of the family, the white-breasted, measures only five or six inches long, including the bird's stubby, squared-off tail. Dressed for the circus, this acrobatic clown is ready to perform for you. Its costume consists of a white face with a thin, upturned, black bill; on its head, a black cap that extends to the nape of its neck; a blue-gray cape covers its back and wings; and a white belly and black tail. The coloring of both sexes is the same.

Once you have identified a nuthatch, sit back and watch him go through his stunts. As the nuthatch walks down the tree head first, it is looking for insects hiding in cracks and crevices. By coming *down* the tree, the nutchatch finds food overlooked by woodpeckers and creepers going *up* the tree. Nuthatches consume large numbers of scale insects, caterpillars, wood borers, tree hoppers and other harmful insects, as well as the eggs of those insects, in their downward searches. The nuthatch is the only bird that consistently feeds in the head-down position; it is capable of feeding going up the tree but seems to prefer the other way. Between nuthatches and woodpeckers, an entire tree can be rid of insect pests. During the winter months when insects are harder to find, the nuthatch feeds on acorns, hickory nuts, sunflower seeds and corn. Nuthatches are quick: they have been known to grasp acorns as they fall, or beat them to the ground. The nuthatch also hangs on the underside of a branch looking for food and can hop from the branch it is feeding on to another, or to the trunk of the tree, still upside down. Walking upside down down a swaying rope is no problem for a nuthcatch. On several occassions, I have seen a nuthatch come, head first, down a utility pole as easily as if it were laying on the ground. I have yet to figure out how it was holding on, since there wasn't any bark to dig its claws into.

To attract this little acrobat to your yard and entertain at your feeder, put out plenty of sunflower seeds and hang some suet in a nearby tree. The nuthatch will take and hide the sunflower seeds for a rainy day in bark crevices, behind shutters or wherever it can find a suitable hiding place. Most likely, it will forget where most of its

Irene Vandermolen

food cache is hidden, but it will not go to waste. Chipmunks, squirrels, woodpeckers and other hungry visitors to your yard will find most of it. When the feeder becomes too crowded, the nuthatch goes into Act Two: it fluffs its feathers to look large, lowers its head and tries to chase the other birds away. Some individual nuthatches will become tame enough to accept food such as sunflower seeds or peanuts from your hand. Others will even take food from a person's lips. To tame any wild bird to accept food from your hand is quite an accomplishment and requires a great deal of patience.

Nuthcatches are mon-migratory birds, and with a few large trees in your yard, this clown will entertain year-round.

Nuthatches are solitary birds. The nuthatch may roost with its mate during extremely cold weather, but it prefers to roost alone. When the temperature drops, nuthatches may join a flock of chickadees and titmice. Since these species look for insects in different parts of the tree, there is little competition for food. For its size, the nuthatch is quite a noisy bird, and sings most of the year. You'll hear the nasal "yank-yank-yank" call even when the bird is nowhere to be seen. This is often answered by its mate from another tree where it is feeding. During the mating season, the male calls a soft "whit-whit" to its mate, to whom he is devoted during the nesting season.

When spring arrives, the pair will set up housekeeping in an abandoned woodpecker hole or natural tree cavity. On occassion, nuthatches use artificial nesting boxes. They are more likely to use one that has been covered with bark, but still will use a plain box. If you wish to construct a box, we recommend the following dimensions: the floor should be no more than four inches by four inches, box depth from eight to 10 inches, the entrance six to eight inches above the floor and the hole should be about one and a half inches in diameter. Hang the box 12 to 20 feet above ground in a tree. It is best to hang the box in the fall, so that by spring it will have weathered and the nuthatches will be used to its presence. (If you would like a reprint on nesting boxes, send your request to the Commission in care of the non-game wildlife program.) Whether the pair decides to use a box or a natural cavity, they will line it with shredded bark, tufts of fur, wool, moss, hair, or feathers. A nuthatch will pluck the fur from a squirrel, if it wants some for its nest!

The female lays anywhere from six to 10 eggs; they are incubated by both parents. Both also care for the young, feeding them mainly insects. Feeding continues for a long time after the young fledge. The family may remain together until fall.

Nuthatches and their antics have delighted the child in all of us for years. Those of us who have watched this bird will never forget our surprise at seeing it walk down a tree. The nuthatch's consumption of insects benefits our yards, orchards and forests.

If you fed the nuthatches, chickadees, titmice and other song birds this past winter, you have already benefitted from watching them on dreary winter days. Now that spring is here, you will benefit once again as you notice fewer garden pests.

Nuthatches are another of the many species that will benefit from the non-game tax check-off (Line 20A) on your state income tax form. For more information on how you can help, write: Non-Game, Box 11104, Richmond, Virginia 23230-1104. □

Field Notes

"Bravo!"

by Lt. Herb Foster

Three ladies are chatting over coffee in a small restaurant. They appear to have nothing in common when one compares their ages, their clothes and listens to their accents. However, they do have a common bond. All three are married to Virginia game wardens.

"I don't think I have ever been so disappointed. I spent two weeks preparing for it: I bought a slinky new dress, made reservations, even picked out some new perfume. At the last possible minute the phone rang, we were standing at the front door, and the next thing I knew John was off on the great bear chase in downtown Roanoke until three in the morning. Some second wedding anniversary!" Sandra said disgustedly as she snuffed out her cigarette.

Elizabeth nodded knowingly, "I know just what you are talking about. The worst for me was missing Thanksgiving the last year my Dad was alive. I held that against Bill for a long time. But you know, as time goes on you realize that there are trade-offs. Who else can say she has raised everything from baby bunnies to baby boys? My children used to get such a thrill when Bill would bring home a fawn that some fool had picked up. Oh, the people mean well, it's just that they are ignorant about what's best for wildlife. Would you listen to me? I sound just like a wildlife biologist! Sometimes I wish I had studied wildlife management in college. I could certainly put it to good use when that telephone starts ringing and John Q starts with the questions."

Mary, the youngest of the three, looks apprehensive as she speaks for the first time. "When you mentioned phone calls, I shuddered. Do you know what some fiend did about a year ago? Mike was out working spotlighting, and the phone rang for the umpteenth time. This jerk started telling me that he had shot Mike and left his body in the ditch on Route something-or-other. I really came unglued, started swearing at the ------- and slammed the phone down. Once I settled down a little, I thought to call the sheriff's

office. Thank goodness for those people. The dispatcher called Mike right away and got an answer; I just burst into tears. That was one night Mike came home and stayed. I don't know what we would do without the friendship and support we get from the other law enforcement officers and their families. It's funny how the community seems to respect what Mike does. It's from a distance mostly, but it rubs off on us. I guess that's one of the trade-offs you mentioned, Elizabeth."

"Let me tell you about being scared," said Sandra. "One evening John and I were on our way to a rare dinner out when he recognized a truck that was parked beside the road. The truck belonged to someone John had arrested a couple of times. This man is *mean*; he has cussed John out several times and even threatened him on the phone. Well, here is this guy next to the woods with another character dragging a deer out of the woods. We turned around and John got out to check them. Of course, something was wrong and he started yelling and screaming. I was so afraid that I got John's gun out of the case and was holding it in my lap. John came back to the car, got the gun and told me to go home and call the police department for help while he held this character and his partner. I don't think I have ever driven so fast. When I got home I called the police and got a couple of neighbors to go back there to help John. Everything turned out okay, but I was scared out of my wits. I couldn't go back there myself because I had the baby with me and was afraid for her. John got back about 30 minutes later. We had plenty to talk about that evening! I guess it made me aware of what he goes through when he is dealing with hard-core law breakers. But, you know, I like what John does. It has given him a sense of responsibility, a confidence in himself and a certain maturity. It took me a while to adjust to being married to the Game Commission, but I see that he is happy doing this."

"It took me about a year to adjust," added Elizabeth, "and it was tough." We had lived in Richmond for a long time. We were used to "city things," movies, a variety of restaurants, the museum and concerts, and all our friends lived there. All of a sudden I was in rural Virginia, and I mean country. I was so lonely, but gradually I got used to it. I went back to work for money and something to do. That's another thing: it's hard to get a job in a rural area, although Bill's job helped with contacts and all. Anyway, I know several men who left the Game Commission because their families were simply unable to cope with the pressures or couldn't adjust to being away from home. I was lucky to have adapted, and for the most part, everything is good now. The hardest part now is simply not having a normal family existence, with the interruptions at dinner and not being able to comfortably plan an evening out. We just have a hard time ever being off-duty. What do you think is the best part, Sandra?"

"John looks damn good in his uniform! Seriously? The best thing is what they do. Protecting wildlife is a good thing."

Most game wardens agree that their wives are an integral part of the work they do for the Virginia Game Commission. No group has been so taken for granted or their efforts gone so unnoticed. The characters and conversations here are fictitous, but both are based on real people and actual events. I would like to take this opportunity to thank the wives who have endured these and many other trials. Bravo! □

MANAGING

Your Wildlife Resources

Members of the game division are working for wildlife and you in the field, in the air, on the water, and in the office.

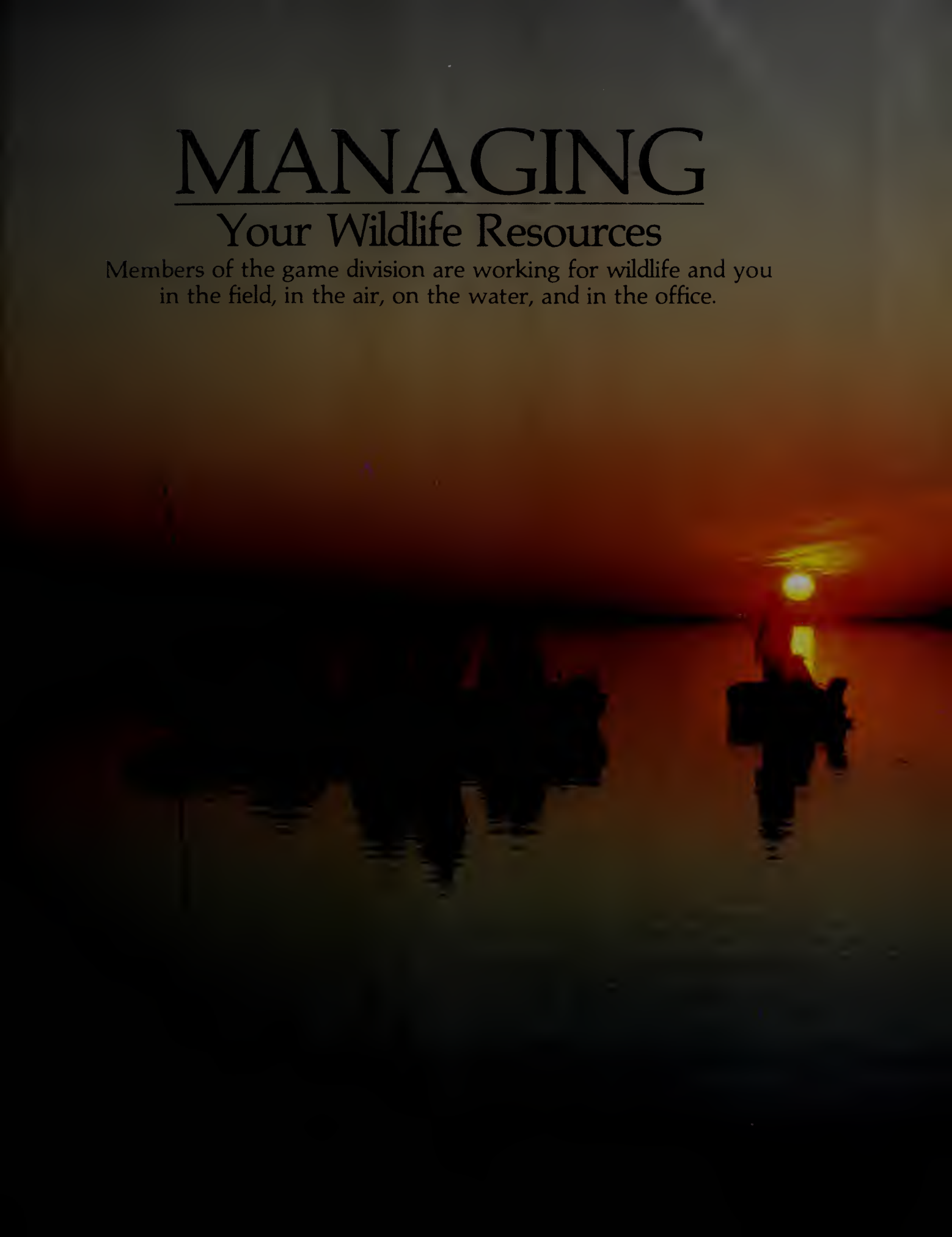


photo on preceding page by Mel White

Dennis Martin

The staff, represented by division chief Jack Raybourne, presents their research findings and proposals for hunting regulations at Commission meetings (right, top photo).

Two habitat management techniques employed by the game division are creating water holes for wildlife by using explosives (large photo) and prescribed burning (far right, top).

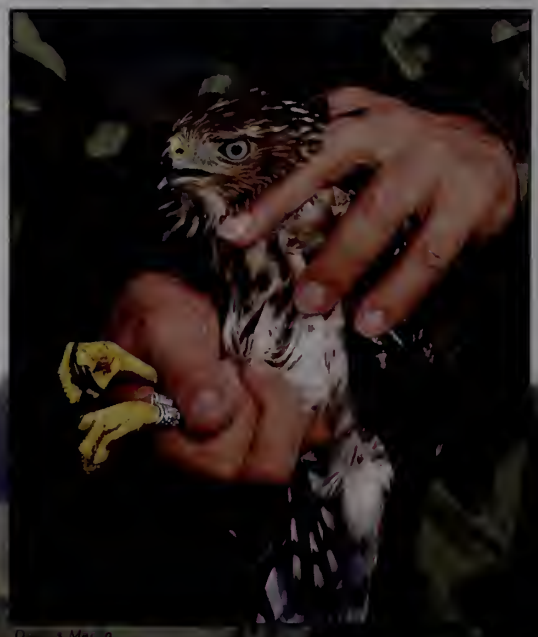
More and more, the "game" division is working with both game and non-game species. The division's activities on behalf of game animals have traditionally benefitted non-game; but with the advent of the non-game and endangered species program, the staff has become more actively involved with these wild creatures. (Right, center photo) a biologist with a Cooper's hawk; (far right, center photo) an immature screech owl.

Game biologists are busy at check stations during hunting season. Information gathered here will be useful in formulating proposals for future seasons and bag limits (right, bottom photo).

Forestry assistant Bev Ambler takes a core sample from a tree on one of the Game Commission's wildlife management areas. This sample will allow him to determine the age of the tree (right center, bottom photo).

Game biologist Charlie Gilchrist and Essex County game warden June Hutchinson band scaup in one of the game division's studies (far right, bottom photo).

F.N. Satterlee



Dennis Martin

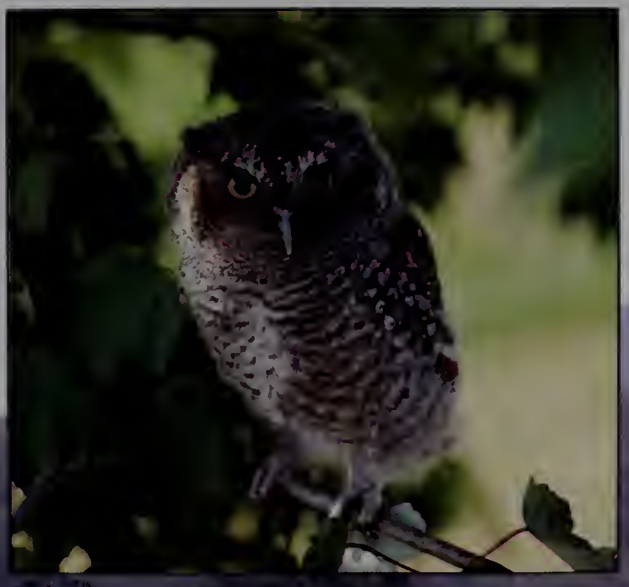
Perhaps the most often-asked question from the public about the Commission of Game and Inland Fisheries is, "Who sets the hunting regulations, and how are they determined?"

The 10-member Commission sets season dates, bag limits, and other regulations, and they base their decisions on information and proposals furnished by the staff of the game division, as well as representatives of the sporting public. The research necessary to develop such proposals, and their presentation to the Commision, comprise onee of the major responsibilities of this division.

Two other mammoth tasks facing this staff are the management of 2,300,000 acres of state-owned and cooperatively-managed land, and conducting some 35 research projects each year.

These are only a few of the vital services performed by the game division. The photographs on these pages tell the story of these dedicated people and their mission.

Dennis Martin

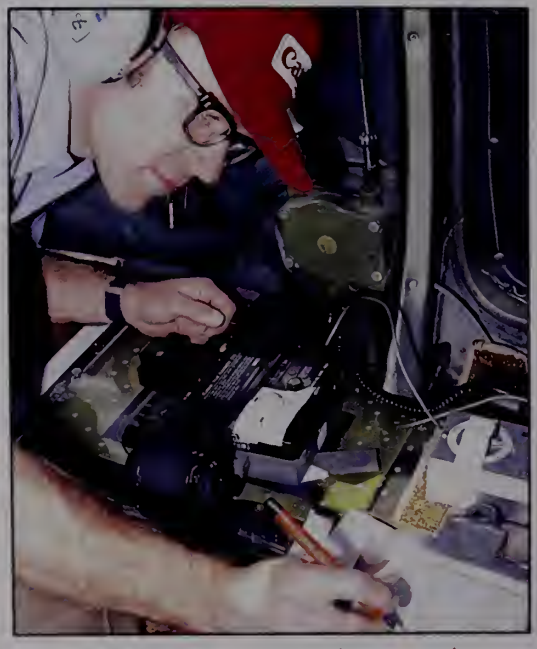


Hassel Taylor

Biologists can learn a great deal about different wildlife species through the use of radio transmitters to track the movements of a particular bird or animal. Here (large photo), the species under study is the ruffed grouse.

Oak mast (top left) is a valuable food source for wildlife. By studying it, biologists can make certain predictions about wildlife populations and how they will fare during the winter months when food is scarce.

(Top right) Biologists Joe Coggin and Dennis Martin determine this deer's time of death by conducting certain test on the animal; this is an important tool in assisting law enforcement in criminal cases.



Dennis Martin

Aerial photography is one of the newest and most useful research techniques available to the wildlife manager. Here (above), Dennis Martin photographs tracts of land from a specially-equipped aircraft. The infrared photography tells biologists what kinds of vegetation are growing on the land photographed, and does it much more efficiently than could be accomplished on the ground.

Outdoor Notebook

Edited by Mel White

Francis N. Satterlee

Sgt. Allen

Mr. Potter

Francis N. Satterlee

In Memoriam

The Virginia Commission of Game and Inland Fisheries sustained the loss of two prominent members during the month of February. Tenth District Commissioner I. Lee Potter died on February 21, 1983 following a short illness. Funeral services were conducted in Arlington on Friday, February 25 at the Memorial Baptist Church. In addition to his long-term participation in the political arena, Mr. Potter was a director of the Wolf Trap Foundation in Vienna, Virginia, regional chairman of the American Cancer Society of Northern Virginia, and served on the Virginia Game Commission.

Earlier the same week, Sergeant James E. Allen, a veteran of 26 years' service as a game warden with the Commission of Game and Inland Fisheries, was buried in Amelia. Funeral services were conducted in the same Episcopal church in Amelia where Sergeant Allen has been a lay reader for more than 36 years.—*Francis N. Satterlee*

Hikes in the Washington Area

Most books won't make you go outside and take a hike, but this one produced by the Potomac Appalachian Trail Club will!

"Hikers" might be a misnomer, for many of these are simply pleasant walks. Written by two Washington area walkers, Phil Stone and John Bennett, this guide specializes in those walks open to the public in the Virginia half of the D.C. region.

The paths discussed in this little booklet are chosen because of their scenery and accessibility. All are within 50 miles of Washington, D.C. Of more than 20 hikes, several are in Arlington, several in Fairfax County, and several a little further out, giving you good choices of time and distance as well as scenery. It's a good bet that you've never heard of several of them: Donaldson Run along the Potomac River (in Arlington) and the Accotink Wildlife Refuge (in Ft. Belvoir!). One features Indian relics along with the spectacular scenery, and the other features a working beaver dam, along with other fauna.

For flora, the guide points out those trails which feature outstanding exhibits of naturally-growing wildflowers. Phil Stone, in fact, is a specialist in wildflowers and though the book is not devoted to flower devotees at all, his famous Wednesday afternoon walks for retirees and other lucky folks helped him discover all these hikes the rest of us don't know about yet. John Bennett, also retired, made the maps for this edition, producing clear, simple, beautifully easy-to-read maps.

Each trail has a description of the starting point, where to park, what to expect, how long and what to look for, along with instructions for where to turn left and right.

The book is available from the Club, 1718 N Street N.W., Washington, D.C. 20036. The price is $4.25, postpaid. □

Environmental Scholarships Available

The Virginia Resource-Use Education Council still has a few scholarships available for its environmental course for teachers. Vacancies exist at Longwood and Virginia State.

The course is designed to help the teacher at all grade levels do a better job in presenting environmental concepts in the classroom. It is aimed at teachers (kindergarten through 12th grades), supervisors, and administrators in public and private schools.

Thirty scholarships are offered at each institution covering all in-state tuition. An allowance is offered toward tuition, fees, and room and board for those who stay on campus. Applications will be accepted until all scholarships are filled. Scholarship recipients will be notified by return mail.

Dates of the unfilled courses are:

□ Longwood—June 27-July 15, 1983

□ Virginia State—July 5-July 22, 1983

Three semester hours' credit will be given for satisfactory completion at Virginia State and Longwood College. Credits may be used by all teachers for certificate renewal or toward endorsement by biology and earth science teachers. Qualified students may apply for graduate credits.

To apply, send name, address and choice of school to: Virginia Resource-Use Education Council, c/o Bernard L. Parsons, Seitz Hall, Room 203, Virginia Polytechnic Institute & State University Blacksburg, Virginia 24061-7098.

In-Town Whitewater Race Scheduled for June

Richmond is one of the few cities in the world that can boast of a free flowing river with Class IV rapids running right through town. Taking advantage of this, the fine weather (we hope), and Richmond's June Jubilee, a whitewater canoe race has been scheduled for June 4.

Two races are scheduled. The Downriver Race is a fun race for all who enjoy the outdoor challenge in a canoe. At normal water levels, this is a Class I-III whitewater 4½-mile race. Starting point is below Williams Dam and continues to the Nature Study Center at Reedy Creek in James River Park.

The other race is a Championship Wildwater Race sanctioned by the American Canoe Association. Starting point is the same as the Downriver Race with the finish eight miles away at Ancarrow Marina. The first 4½ miles is Class I-III with the next 1½ miles rated at Class III-IV with four heavy and difficult rapids. The last two miles are flat water. This race is for experienced and skilled whitewater paddlers.

For additional information, phone Wild River Outfitters (804) 484-7330. □

Evidence

Bob Panko

Semi-automatic rifle which was confiscated as evidence in connection with hunting violations in the Shenandoah National Park is held by Park Ranger Dick Batman. The rifle was equipped with an infared scope and silencer.

Acid Rain, Wetlands Loss Most Critical

The "environmental disaster" of acid rain and the increasing loss of wetlands are among the nation's most critical conservation issues, according to delegates attending the National Wildlife Federation's annual meeting in Albuquerque.

Air and water pollution, population, soil erosion and the loss of wildlife habitat were ranked among the major issues that the delegates to the 47th meeting of the Federation said are "the paramount problems facing the nation."

The delegates represent affiliate organizations in 49 states and two territories.

"Acid rain is an environmental disaster," the delegates voted in a resolution. "The Federation believes that the only effective way of abating this problem is to control at their sources the emissions that form acid rain."

Citing the loss of about 450,000 acres of wetlands a year, the delegates voted to denounce the dismantling of the Section 404 permit program as "both unlawful and contrary to the goals and objectives of the Clean Water Act, and counter to the public interest in wetland protection."

The delegates also voted to reaffirm their support of a strong Clean Water Act and a strong Clean Air Act, and to support stronger toxic screening of hazardous materials. □

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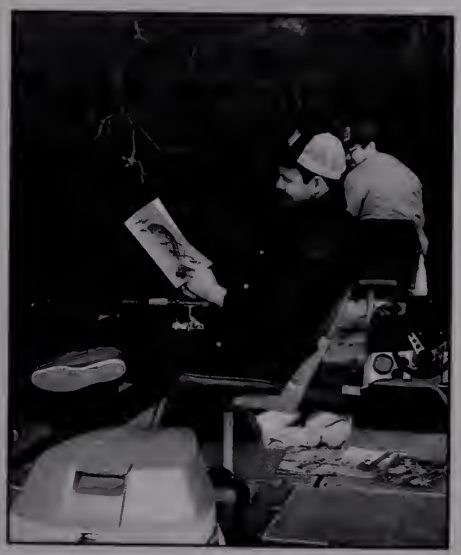

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A Healthy Respect

That's what you owe the water, because boaters who make mistakes sometimes don't live to tell about it.

by Jim Agnew

When I began working on this article and thought about how to approach the topic of boating safety, I cringed at the thought of churning out yet another statistics-laden report of last year's accidents.

However, 16 people were killed and 26 injured while boating in Virginia in 1982. Therefore, I decided that I would relate a number of incidents which I have investigated during my nine years of boating law enforcement, as a Virginia Game Warden and during my service with the U.S. Coast Guard Reserve. The following events are fairly typical of mistakes made all too often by boaters.

Water can be terribly unforgiving, and it deserves the utmost respect. The two-acre farm pond is as likely to claim a victim as is the Chesapeake Bay or the New River. But some boaters ignore safety precautions and put themselves at the mercy of faulty equipment or unstable weather. The boating safety gear required by law is the minimum, but the wise boater will watch the weather and have extra safety gear on board. The careless boater is usually the victim.

The Coast Guard has forms for filing a float plan similar to the flight plans filed by pilots. This may not be necessary in all cases, but each skipper should tell someone where he is going and when he plans to return, before each trip.

The first accident I had the misfortune to investigate occurred off Block Island, Rhode Island in September 1974. At the time, I was a seaman on the Coast Guard Cutter *Unimak*. The *Unimak* was enroute to Martha's Vineyard when we received a distress call from a pleasure boat which had spotted an overturned catamaran. The *Unimak* started searching immediately, but darkness and 25 mph winds hampered our efforts. After searcing for 24 hours, we quit.

Three weeks later, the operator's body washed to shore. He was a middle-aged man with very little sailing experience. He was not wearing a life jacket, and he hadn't told anyone his plans. He might have been saved had he used better judgement.

Some boaters become victims not because they are unequipped, but because their gear is faulty or in wretched condition. I often hear complaints from boaters I've summoned to court for torn life jackets or bad fire extinguishers. Granted, no one wants to get a ticket, but at least one man would be alive today had his wearable life jacket been in good shape.

This gentleman was in his middle 50's and was fishing for striped bass on Lake Gaston. He and two friends were having pretty good luck when they decided to try the swift water half a mile below Kerr Dam. He put on his life jacket and made a terrible mistake: he anchored his boat from the stern. As he stood to cast his line, he shifted his weight to the rear, and the stern dipped into the rushing current. All three people were tossed into the water as the boat swamped and then capsized. The two companions were washed several hundred yards downstream, but they were able to scramble ashore. However, the victim's life jacket disintegrated as he hit the water, and he was last seen struggling to swim in the current.

We found his lifejacket an hour after the accident, and it was in abominable shape. The cover was shredded and the straps and Kapok lining had dry rotted. His throwable cushion was in the same condition and was of no use to him or his companions.

Tragically, his body was found eight days later by a 13-year-old girl who snagged him with her fishing line.

Leon Kesteloo

Don't let carelessness or faulty equipment ruin your trip—or worse.

Fire is a constant hazard for any gasoline- or diesel-powered boat. Many vessels are designed with engine spaces or compartments that trap explosive fuel vapors. Refueling and starting can be particularly dangerous if these spaces are not properly ventilated or if gas spills onto the deck. I advise all boaters to carry a fire extinguisher; if a fire starts, there is nowhere to go but over the side unless it can be snuffed.

In July 1977, a man (we'll call him "Mr. Jones") was repairing the engines on his cabin crusier which was moored at a marina on the James River. He had broken a fuel line and a two-inch pool of gasoline had accumulated on the decks of his engine room. In an effort to clean the mess, he brought a small gasoline-powered pump on board. But when he pulled the starter cord, the gas on the decks ignited and a surly orange fireball erupted on board, threatening the entire marina.

I was with the Coast Guard boat crew about 100 yards from the boat when it exploded. After a few seconds, we gathered our wits about us and ran to the flaming boat with two large, dry chemical fire extinguishers. Mr. Jones was nowhere in sight, but his pet bulldog was running down the dock trailing blue smoke from his singed hair. Shortly after extinguishing the flames, we spotted Mr. Jones in the water. He was horribly burned, but we were able to get him onshore. He survived because he was able to douse his flaming clothing by jumping overboard, but he might have died had he been in open water.

In just about every accident I have investigated, alcohol has been a contributing factor, if not the primary one. Liquor acts as a catalyst: careful people become less careful, and careless people become dangerous.

A person under the influence is difficult to detect on the water. Bright sunlight causes squinting and makes eyes red. The wind and fresh air allow odors to dissipate easily, and everyone, drinking or not, is unsteady on his feet on a pitching, yawing boat. But when a drunk becomes reckless, it's noticeable.

In August 1979, I was called to Pea Hill Creek on Lake Gaston. A 15-foot outboard boat had crashed into the rip rap of a small bridge and the operator had been taken to the hospital. The bow of the boat had come to rest eight feet above the water and was wedged between the bottom of the bridge and the rip rap. The windshield was completely smashed and bloody beer cans littered the decks of the boats.

I found in my investigation that the operator had been drinking heavily and had terrorized several jonboats shortly before he crashed. Apparently he and a friend had decided to play chicken at the bridge, and he lost. This fellow received 50 stitches in his face and scalp and was later convicted of reckless operation of a motorboat.

I have worked many other accidents. Some involved motors that were lost overboard, some resulted in multiple deaths and injuries. But statistics show that the majority of people involved claim to have been experienced boaters. Therefore, the common element in 99 percent of them must be carelessness. One momentary lapse, one life jacket left on shore or allowed to rot, or one beer too many may result in a disaster.

So, check your equipment before your trip, and after your trip, and, if you have any doubts about serviceability, replace it. Let someone know where you're going. Watch the weather. Above all, use good judgement and respect the water. □

KNOTH

Bird of the Month

The Killdeer

by Carl "Spike" Knuth

The medium-sized, long-legged bird looked hurt as it dragged its outstretched wing, fluttering pitifully and calling a shrill, chattering "dee, dee kill-dee." The closer I walked to the edge of the big gravel parking lot, the more vociferous it became. As I followed it, it struggled harder, but always staying well out of reach. I continued to follow just to satisfy the little bird. One of its kind had first fooled me with this trick 35 years ago. I learned in succeeding years that this is how the killdeer leads intruders and predators from her nest. Now, each time it happens, I almost feel obligated to let the little killdeer hen think she has succeeded for all her effort. Despite this, I still look around trying to locate the spotted and blotched eggs she is protecting and seldom am I able to find her nest.

The killdeer is a plover, of which there are 75 species worldwide. In North America there are eight species of plovers, the killdeer being the most common. While similar to sandpipers, plovers are generally chunkier with shorter necks and shorter, pigeon-like bills. They tend to feed on the ground's surface in drier areas rather than probing like sandpipers. Plovers normally feed in open fields, shores of lakes and dry mud flats.

The killdeer's scientific name is "*oxyechus vociferus*," the "*vociferus*" undoubtedly alluding to its shrill and almost constant "kill-dee, kill-dee" call. When calm and at rest, it utters a mild, abbreviated "dee!" Its other common local names include "noisy plover," "chattering plover," "killdee," "killdeer plover," "field plover," and "meadow plover." The last two names are descriptive of the killdeer's favored habitat.

While it is fond of wet places, the killdeer is a bird of the fields, grazed meadows, pasture ponds, parks, plowed or harvested croplands, and graded and filled roads and construction sites. The killdeer measures nine to 11¾ inches in length, is pure white below and shows two distinctive black bands across its lower neck and upper breast. This helps distinguish it from the single chest band of the smaller, look-alike semipalmated plover. It has a black band across the side of its head and dark patch atop its head separated by a white forehead and eye stripe and it has a white throat. Its rump is orange-brown or cinnamon in color and its back is grayish-brown or olive brown. In flight it shows a white stripe the length of its opened wing which forms a "vee."

Killdeers feed mainly on insects and insect larvae. They especially like to follow plows and discs to feed on grubs and worms. They are found in cropfields of all kinds, feeding on beetles, grasshoppers and crickets. It is alert and nervous on the ground, running about with quick steps, frequently bobbing its head. Its flight is swift and graceful, though erratic. I remember a killdeer flying over our duck blind making a sharp right angle turn that put so much strain on its wing feathers that the resultant sound resembled the sound effects of an arrow in flight used on radio and television.

Killdeers are early arrivals to their breeding grounds in the North, having seldom gone very far south. In Virginia, killdeers are commonly found all winter and are common breeders as well. They breed over all of the United States, southern Canada and northern Mexico. They breed from northern British Columbia through Mexico and south along the Peruvian coast in the west, and from southern Quebec to Florida and the Bahamas in the east and most land in between. To me, one of the most pleasant and calming sounds in the outdoors is that first warm spring evening when newly-arrived killdeers call to each other in the fields, well after dark.

The killdeer's nest is merely a hollow or depression in the ground, lined with a few feathers and grasses—maybe some small pebbles—usually in the open on land with stones, gravel and dirt and occasional tufts of vegetation. Often, it is built at the edges of gravel driveways or parking lots and on construction sites and landfills. Low, gravel-topped buildings such as schools often host nesting killdeers. About four creamy-buff eggs, heavily blotched and streaked with black, brown and deep lavender, are laid—perfect camouflage for gravel sites. Usually the hen will leave and approach the nest quietly and undetected, but if surprised by an intruder, or if someone blunders into the area, she'll go into her limping, fluttering, gasping act of agony until the intruder is far enough away at which time she miracuously "recovers."

Incubation takes about 24 days and the downy young are easy to identify as soon as their natal down is dry, for they resemble the adults. They are precocial—that is, they are mobile almost immediately, running about feeding on little insects. When the brood is in danger and the mother goes into her broken wing act, the little ones hide in an almost frozen position.

The killdeer is very hardy and its call can be heard well into November even in the North. When they migrate, they move about in loose flocks, occasionally with other shore birds, but very seldom around salt water. At this time, dove hunters must be alert to the fact that killdeers like to inhabit harvested fields. Their erratic flight style can be mistaken for doves at first glance. However, the longer, more pointed wings, and the "kill-dee" call certainly should be distinguishable enough for the alert hunter to properly identify his target.

The killdeer winters over most of the southern half of the United States from southern British Columbia, southern Illinois and New Jersey south, and along Mexican coasts and northern South America. □